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ABSTRACT

This book is the first part of a series of six books designed to provide valuable resources to teachers and curriculum specialists as they construct viable environmental education programs for their students. The material in this manual was produced in response to student and teacher demand for material to support the environmental education model described in Section II of this book. The activities in the manual were developed largely in writing workshops by teachers familiar with the environmental education model. Most of the activities were used in the classroom and modified according to student teacher response. Book 1 provides the environmental education philosophy and model. Also included are guidelines for implementing the environmental education model and lists of environmental education resource materials. The resource materials include: sources of prepared environmental education curriculum materials for teachers, information agencies and organizations, film sources, periodicals, publishing, bibliography of instructional materials, environmental monitoring kits, games and simulations, series of prepared catalogues and bibliographies, and sources of audiovisual materials. (BT)

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ENVIRONMENTAL EDUCATION ACTIVITIES MANUAL

William B. Stapp
Dorothy A. Cox

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SE 019 503

CONCERNING SPACESHIP EARTH

ENVIRONMENTAL EDUCATION ACTIVITIES MANUAL

Book 1: CONCERNING SPACESHIP EARTH

Book 2: LOWER ELEMENTARY ACTIVITIES

Book 3: MIDDLE ELEMENTARY ACTIVITIES

Book 4: UPPER ELEMENTARY ACTIVITIES

Book 5: JUNIOR HIGH ACTIVITIES

Book 6: SENIOR HIGH ACTIVITIES

Edited by

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FOREWORD

In these times, it is important to continue to protect and improve the environment in which we live. Our present society has become very aware of and concerned about the environment. Steps are being taken to improve it. Eternal vigilence is needed, and a well educated population is the best insurance for its preservation.

A comprehensive environmental education program is essential to our future, and schools accept the responsibility for the education of our children and youth. It is through active participation, year by year, kindergarten through the twelfth grade, that the quality of living will improve in our villages, towns, and cities. The young are making a great impact with their ideas and their concerns for the future of our world.

This publication will provide valuable resources to teachers and curriculum specialists as they construct a viable environmental education program for their students. Contained here is not an array of "hothouse" ideas but actual activities which have taken place in the classrooms. They include many important contributions coming from students, teachers, and community members.

For the past four years, students at all grade levels and in many diverse community settings throughout the City of Toledo have been involved in the program. Significant resources have been contributed by the University of Michigan, but the activities described here have had the test of actual field experience.

Lee R. McMurrin
Deputy Superintendent
Toledo Public Schools

August, 1974

PREFACE

The environmental education philosophy and model presented in this manual have been developed over a period of seven years. During this time, different aspects of the environmental education model were developed, introduced into one or more school systems, and shaped into its present form.

The material in this manual was produced in response to student and teacher demand for material to support the environmental education model described in Section II of Book 1. The activities in the manual were developed largely in writing workshops by teachers familiar with the environmental education model. Most of the activities were used in the classroom and modified according to student-teacher responses. Most of the activities are original creations designed to assist the learner in acquiring specific knowledge, skills, or learning processes.

Special recognition should be given to the following individuals for the vast amount of time and effort spent in helping to produce this material: Diane Boyd, Jo Ann Burgess, Judy DuShane, Glen Erickson, Mary Graham, Margery Harris, Tim Lozen, George Moore, Ann Sibole, Talbert Spence, Michael Tealey, Ellen Vande Visse, and Richard Willhite. Recognition should also be given to the following public school systems for sponsoring teacher-student workshops to help produce the following materials: Dearborn Public Schools, Oak Park Public Schools, Toledo Public Schools, Utica Public Schools, and the Ralph MacMullen School of Conservation.

We are very appreciative of the effort of Mrs. Carol Oakes and the School of Natural Resources Service Center for typing this manual. We would also like to recognize the full support and assistance of Gloria Stapp and Jim Cox in helping to edit the manual and for providing invaluable services throughout the task of producing this manual.

We hope that you will find this manual helpful and that it will assist you to successfully integrate environmental education into your class, school system, or organization.

William B. Stapp
Dorothy A. Cox

August, 1974

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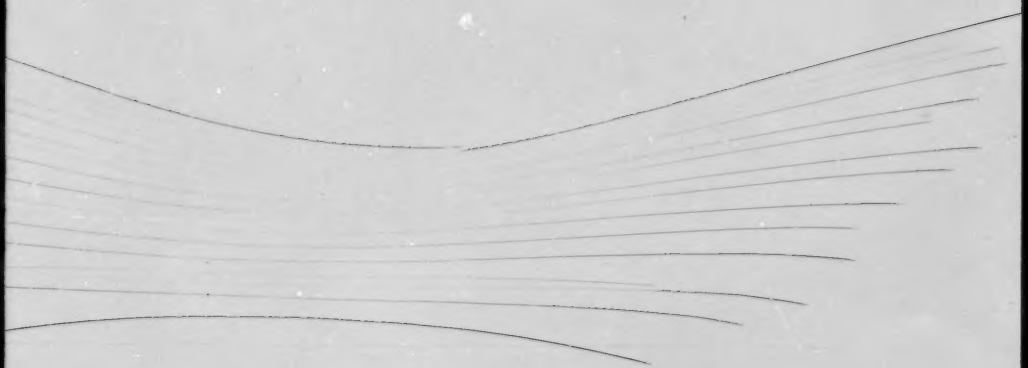
Section I

The Philosophy of Environmental Education



SECTION I

The Philosophy of Environmental Education

The Basic Concept

We share space in a narrow band of land, air, and water on the surface of the third planet from the sun. Included in that space are all the resources we will ever have. We are a closed system run by the radiant energy from the sun.

We are members of one of the many populations of living species on spaceship earth which, like all populations, live, and consume resources, and die. But, unlike any other species, we have developed an economic system using a technology which has consumed vast amounts of resources, brought about rapid environmental changes, and overloaded the environment with waste. We have developed the potential to destroy ourselves.

By our decisions and actions we determine the quality of our environment. We have an obligation to our generation and future generations to preserve a quality of life that we perceive to be necessary for a healthful, productive existence for all people.

The Definition and Goals

ENVIRONMENTAL EDUCATION IS... the basic process leading toward the development of a citizenry that is aware of and concerned about the environment and its associated problems, and that has the knowledge, skill, motivation, and commitment to work toward solutions to current and projected problems.

The goals of planned change for environmental education are to make all citizens knowledgeable about their surroundings and to help them use this environmental knowledge effectively to make their community, state, and world a better place to live.

-from Michigan's Environmental Future a master plan for environmental education for the State of Michigan, 1973

The Situation

For the past hundred years there has been a growing concern that uncontrolled resource exploitation would eventually destroy the quality of present and future life as we know it on our Spaceship Earth. At the same time as we began to preserve wilderness areas (1860s), and learn the necessity for wise management of our natural resources (early 1900s), more and more of our population were moving away from rural America into urban centers. The contact of city dwellers with natural systems on a day-to-day basis has become remote or non-existant.

The 70+% of our people, who now live in urban and suburban areas, are more conversant with cement, steel, traffic jams, and crime than frogs, trees, ecosystems, and interrelationships of all kinds. In urban ghetto areas, day-to-day survival takes precedence over any thought of wilderness preservation. The worst air and water pollution problems affect that part of the population least able to escape or deal with such severe health hazards.

Sheer masses of people have made political processes seem so complex as to be unreachable and untouchable by the average citizen. Apathetic citizens retreat within their homes finding it simpler not to get involved, particularly those who feel that they cannot be effective in bringing about change. The quality of life depends on a concerned, motivated citizenry willing to involve itself in the decision making process and make its collective voice heard.

The foundation for strong citizen action rests to a large degree on what happens in our homes and schools. Today's youth will soon be the voters whose decisions will affect not only the immediate environment in

which they live, but also that of the nation. They will make decisions and cast votes about housing, recreation, transportation, beautification, and air and water pollution. It is imperative that schools provide youth with the knowledge and problem solving skills they need to cope effectively with these life involving decisions.

While it is important to make informed decisions about existing issues, it is imperative that citizens understand that much past and current action only deals with symptoms of problems. Effective and lasting change will not occur unless we have the perception to investigate, determine, and attack the root causes of the environmental problems facing society.

Underlying, or root, causes of our environmental crisis lie in the behavior patterns and value systems of individuals that consume, and those individuals who direct the businesses that supply them. Each citizen at all levels of responsibility needs to develop an environmental ethic and a priority to accept and internalize the social costs of his actions. Only then would symptoms be effectively reduced and a desirable quality of life be preserved.

How will the educational system prepare these future citizens?

One way is to develop the awareness, attitudes, values, and skills of students in an interdisciplinary environmental education process where students and teachers work together to learn how to live harmoniously with their environment. Since schools are in the business of producing useful, literate citizens, they need to extend and expand their thinking and emphases to include environmental relationships. The present educational process has the bits and pieces of information needed to make informed judgements, but usually do not tie together these isolated facts to show how they are related to, or can be used in our daily lives.

This environmental education activities manual will suggest a way to use existing subject areas by providing:

The concepts and supportive understandings,

the processes by which these understandings can be internalized,

and the teaching methods best employed to provide

a program emphasis aimed at improving

the environmental quality

of SPACESHIP EARTH.

Section II

The Environmental Education Model

SECTION II

THE ENVIRONMENTAL EDUCATION MODEL

What is E.E. ?

1. E.E. is NOT conservation education.
2. E.E. is NOT a subject - it is a process.
3. E.E. is multidisciplinary.
4. E.E. is community oriented.
5. E.E. is problem focused.
6. E.E. includes ALL components of society.
7. E.E. builds on the past - good work.
8. E.E. is teacher-student oriented.
9. E.E. is both formal and non-formal.
10. E.E. could be educational reform.

- Dr. George Lowe
U.S. Office of Environmental Education, HEW, Jan. 4, 1972

The development of students into effective decision makers who have an environmental ethic can be implemented by means of an effective environmental education program. Successful programs can be based on different models. The model described in this manual is action-oriented and includes many processes and techniques advocated by leading environmental educators. The model consists of four integral parts: philosophy and concepts, processes, teaching-learning models, and emphasis.

THE PHILOSOPHY AND CONCEPTS

"We share space . . .
in a closed system . . .
Our actions . . .
determine its quality."

An environmental education program should assist the learner in understanding this basic spaceship earth philosophy which would serve as an "umbrella" of thought and ethic for the entire program.

-9-

The spaceship earth philosophy has been divided into five basic concepts: ecosystems, population, economics and technology, environmental decisions, and environmental ethic. These concepts encompass the awareness, knowledge, and understanding of the living and non-living world and their complex interactions; the social, economic, political and aesthetic influences of the populations of people; the need for, and processes of decision making; and development of an environmental ethic which would motivate the learner to adopt a life style compatible with environmental quality. These concepts are basic and essential and can be presented in a manner to be understood by students of all ages.

Each of the five concepts have been divided into grade level statements called understandings. These understandings outline the focus for the various grade levels within the broad concept, and serve as the base for the concept building activities, skill building activities, community problem solving activities (environmental encounters), and valuing activities found in this manual.

These understandings are cumulative. Each level builds on the understandings of the previous level. Therefore, any higher level teacher may find it desirable to adapt some of the activities from a lower level in order to develop the awareness and knowledge needed as a background for the sub-concept under consideration. An understanding of these concepts is essential in the development of environmentally literate citizens and should be considered and integrated into all areas of the curriculum.

Section I in Books 2-6 describes activities which are designed to develop these basic concepts and understandings at every grade level.

THE PROCESSES

Two basic processes that are an integral part of environmental education are problem solving and valuing. These two processes relate to each other and assist the learner in developing the process skills necessary to carry out an effective action plan. These processes also help the learner to develop skills of critical thinking, planned social change and interpersonal communication.

The Skills of Problem Solving

In many educational systems, it is assumed that students who have been through science and social studies investigations somehow know and can utilize skills in problem solving. When such skills are taught in academic isolation, the student is left to synthesize the skills into a personally useful process, if he can. Since the environmental education model is based on student involvement, problem solving skills are essential to developing and carrying out action plans.

Section II in Books 2-6 is devoted to grade level activities which are aimed at developing the eight problem solving skills of:

PROBLEM SOLVING SKILLS

1. Recognising environmental problems.
2. Defining environmental problems.
3. Listening with comprehension.
4. Collecting information.
5. Organising information.
6. Analysing information.
7. Generating alternative solutions.
8. Developing a plan of action.

Clarifying Values

These problem solving skills become invaluable when applied to an issue which has meaning to the student. Student-oriented action involves choice, and choices are derived from individual beliefs, attitudes, and values. Environmental education cannot avoid value issues because an individual's values determine his decisions and consequent behavior.

To understand the role of valuing in this model, it is important to realize that the philosophy, concepts and understandings go beyond the common surface, or symptomatic, activities found in many isolated, infrequent "environmental education" efforts. In order to solve environmental problems, it is essential that we get at the "root" causes -- the life style of each individual. A student picking up litter would be treating the symptom. Developing the concern to change his behavior patterns that caused him to drop the litter would get at the root causes.

In every day life, the learner sees visible pollution (symptoms) produced by technology in its effort to satisfy consumer demands. Because it is easy to get caught up in consumer cycles created by corporations, the learner needs to examine his way of living. As a consumer he should explore the influence of mass media, the subtle dissemination of values in advertisements, and his own tendency to fall into a pattern of compliance -- to "keep up with the Joneses". Each learner needs to be guided through a valuing process where he explores the consequences of each individual action, and where he learns to generate ideas for alternative behaviors that would bring him into a more compatible way of living with his environment.

The valuing process begins with bits of information which are called beliefs. These beliefs tend to cluster together to form attitudes.

Many attitudes together develop a value system that guides and directs behavior. A student begins to develop his own set of values when he starts to consider alternatives, the consequences of alternatives, and his personal feelings toward each alternative before he acts.

The values clarification process advocated by Raths, Harmin and Simon include the three action aspects of choosing, prizing and acting. The steps advocated in the values clarification process are:

VALUES CLARIFICATION PROCESS

1. Students are presented with an issue.
2. Students suggest alternative solutions.
3. Students consider the consequences of each alternative.
4. Students express their feelings about each alternative
5. Students make a free choice.

The values clarification approach helps students become aware of personal beliefs, attitudes, values and behavior which they prize and are committed to both in and out of the classroom. This process assists students in considering alternative solutions and the implications of each alternative. An important role of the teacher is to help each student to consider whether his stated beliefs, attitudes and values are congruent with his actions.

Values clarification is of major importance in making rational environmental decisions every day of a person's life, and must be a basic part of every environmental education program.

Section III in Books 2-6 outlines valuing activities appropriate to each grade level which build upon and extend the concepts and understandings basic to the spaceship earth philosophy.

Community Problem Solving: The Environmental Encounter

The values clarification process and the eight problem solving skills are applied in this action-oriented model to community problem solving. Students need to be able to apply learned skills in both valuing and problem solving to an issue that is meaningful to them -- a problem that directly affects them either at home, or at school, or in the local community. One format for community problem solving is the environmental encounter.

The environmental encounter is an instructional technique for studying the environment with an emphasis not only on the development of interest, awareness, understanding and respect for the environment, but also on the development of problem solving and valuing skills. The student should have the opportunity to become personally involved in positive action through the following recommended steps:

COMMUNITY PROBLEM SOLVING

1. Define the problem or issue.
2. Become informed.
3. Identify alternative solutions.
4. Evaluate alternative solutions.
5. Develop a plan of action.
6. Implement the plan of action.
7. Evaluate the implementation.

Each encounter should contain a list of desired outcomes (behavioral objectives) which provides direction for the learning process. The second section of the encounter lists activities to be developed with students including leading questions which will help develop the information and critical thinking desired. A third section might include a human and non-human resource list of community people and sites, and audio-visual material available.

Some environmental encounters need not be strongly problem-oriented. For example, in the lower grades there should be an attempt to bring out

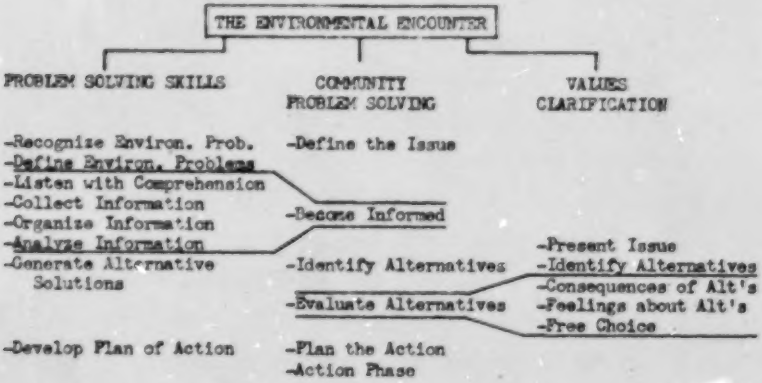
basic awareness and appreciation for the environment. An investigation of the school site by a first grade class might expose the children to ecological principles. Although recognition and solution of relevant problems are appropriate for early grades, the honing of problem solving skills is more appropriate for upper grades.

One of the most important parts of the environmental encounter is the action phase. A common student complaint is, "People always do a lot of talking but no one ever does anything." To feel effective, students need to do something. An elementary school child who picks up litter, makes a bird feeder out of a discarded plastic bottle, makes posters to inform or remind, or writes letters to decision-makers about their concerns is doing something. A middle school or secondary school student who gathers pertinent data and communicates it convincingly to the most effective decision-maker can affect changes and can see he can be effective. An older student, by developing an encounter and participating in community action projects, will develop and refine his problem solving and valuing skills.

Section IV in Books 2-6 contains sample encounters at each grade level identifying suggested school-community environmental problem-solving activities. Teachers are encouraged to adapt these encounters to fit their student and community needs. Whenever possible students should play a major role in selecting and designing environmental encounters. The teacher's role should be one of resource and facilitator. Problems or issues would then be relevant to the local community and make possible the personal involvement of students.

In Summary

The problem solving skills and the two processes of problem solving and valuing complement each other in the following way:

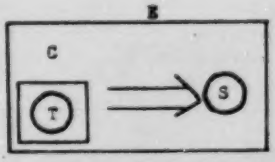


Environmental education is founded on the premise that we will be able to solve environmental problems only when we have developed in citizens an awareness, understanding and concern for the environment with its associated problems, and the knowledge, skill, motivation and commitment to work toward solutions to these current and projected problems. Only by actively involving students in learning processes can we achieve this goal.

THE TEACHING-LEARNING MODELS

There is no single teaching model that all students will respond favorably toward under all circumstances. Some students learn best when there is an atmosphere of strong teacher-student interaction. It is important for a teacher to assess his/her personal skills and the situation and then blend teaching models in an effort to achieve the best learning environment.

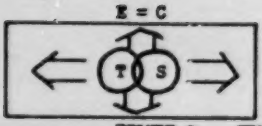
The teaching model traditionally employed in most American classrooms is characterized by a teacher who digests a predetermined body of information and then conveys this material to the student. Such a role is illustrated by Figure 1. When the teacher functions in this role, the content and the subject matter have already been determined by publishers, committees, administrators, or a school board. The teacher becomes familiar with the content and then assumes the role of expert in conveying this information to the student. The student is presumed to have few attitudes or thoughts about the content until after the unit has been completed. The virtue of this model — or teaching based on it — is that it is neat, tight, controlled and orderly. Its weakness is that it is not very effective in achieving the outcomes sought by this action-oriented environmental education model.



E = Environment
C = Content
T = Teacher
S = Student

FIGURE 1. TEACHER AS CONVEYER OF INFORMATION

The amount of information available on the environment and the recent demand of students for relevancy in educational programs calls for a teaching model where the instructor does not serve as the principle source of information — he/she is no longer the expert. The role of the teacher would be to create a learning environment, assist students in acquiring information, provide guidance to the student, and to participate with the student in the learning process. This concept of the role of the teacher is illustrated by Figure 2.



E = Environment
C = Content
T = Teacher
S = Student

FIGURE 2: TEACHER-STUDENT INTERACTION

Research studies have shown that teachers are highly effective when they participate in learning projects as "team members", guides, and counselors, rather as star performers. This means that students would be taking over many of the functions traditionally assumed by the teacher. Decisions on which activities will be pursued, and by whom, should be determined by the students with advice and guidance from the teacher.

The environmentally literate citizen must accept personal responsibility toward himself and others to live in harmony with the environment. The most effective way the five concepts and supportive understandings can be internalized is by both teacher and students being actively involved in the planning and action phases of the learning process.

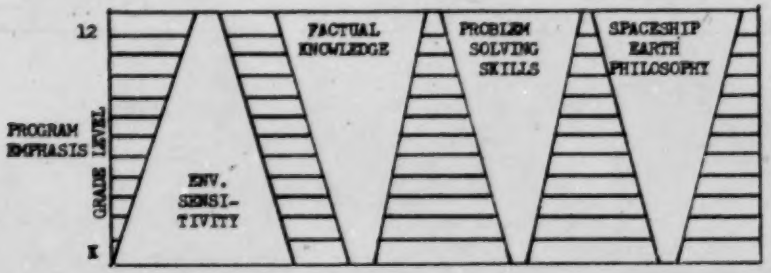
EMPHASIS OF PROGRAM AT DIFFERENT AGE LEVELS

Environmental education activities at <u>each</u> grade level should focus on the feeling (affective), knowing (cognitive) and skill-behavior domains. Emphasis in the early years, however, should be on awareness and feelings and in later years on knowledge and skill-behavior. The learner should also be provided with opportunities to explore his immediate environment with all of his senses — sight, hearing, smell, touch and taste. The learner should be exposed to a variety of physical and social environments in order to have experiences to judge the quality of his immediate environment. For example, an inner-city child who has never

experienced clean air, uncrowded housing, safe streets, unpolluted water, healthy trees, and rich soil, may not have a quality "measuring stick" by which to judge his home environment. Likewise, a rural child may accept an untouched natural environment, not knowing that it can be easily and quickly degraded unless people are actively involved in maintaining its quality. Similarly, each child may not see the strengths, weaknesses, and meaning of his own social environment unless he experiences, as far as is possible, the strengths, weaknesses, and meaning of contrasting social situations.

If a child learns to appreciate and respect environmental resources, he may want to learn more and be willing to protect what he appreciates. Many programs emphasize knowledge rather than feelings in the early years. This emphasis is less likely to produce a citizen who has a motivating concern and a commitment that will result in a tendency to act if the environment becomes threatened.

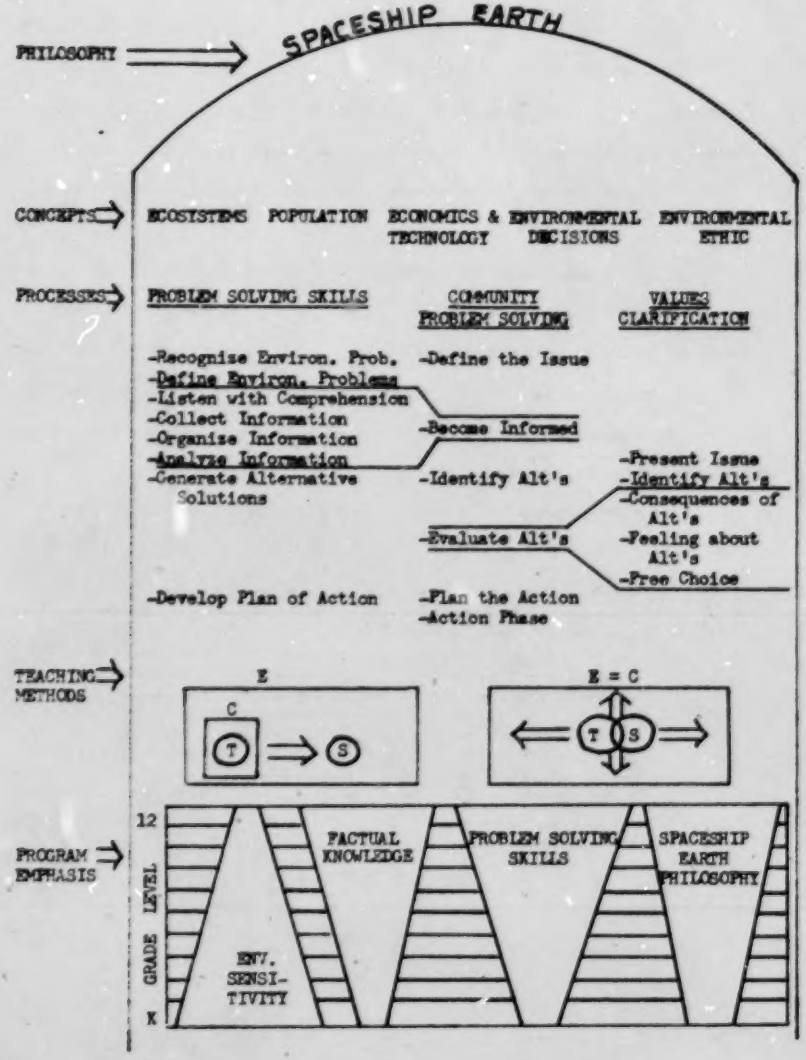
The recommended emphases for an environmental education program are outlined below:



AREAS OF EMPHASIS

ENVIRONMENTAL EDUCATION MODEL

The various aspects of the model discussed in this section are illustrated below:



IMPLEMENTING THE MODEL

A model environmental education program can only be useful and effective if all intended participants are thoroughly acquainted with and understand its philosophy, structure and operation. For this reason, teacher education must be an integral part of an environmental education program.

Just as students need to be actively involved to develop awareness, concern and commitment, so do their teachers and administrators need active involvement and preparation in skill building activities, concept building activities, clarifying their own values and handling community sensitivity, controversial issues and values issues. Section III of this booklet provides guidelines for the teacher in implementing the environmental education model in these areas.

Teachers and administrators need to be provided with first hand experiences regarding their local environment and its associated problems if they expect to effectively guide their students in a meaningful program. Discussion and planning are needed for ways to integrate community environmental studies into the school program. Information needs to be gathered regarding community citizens available to serve the school system as resource persons. A valuable aid will be found in Section IV of this booklet which contains a listing of audio-visual resource material for classroom use.

In order to provide the first hand experiences, active involvement and adequate preparation, most school systems will need to develop a comprehensive inservice teacher education program to orient teachers and administrators to the philosophy and model of environmental education and the enclosed supporting materials.

In the past, attempts have been made to implement action activities into classroom situations where a knowledge of valuing and skills in the problem solving process have been taken for granted. It is very difficult and can be self-defeating if too many new aspects are attempted at one time in one activity. This environmental education activities manual has attempted to provide a step-by-step developmental series of activities which "zero in" on the necessary components of concept building, skill building and valuing. These components fit together into the culminating learning experience of community problem solving.

An important school-wide program objective would be to have each student at every grade level exposed to the concept building activities, skill building activities, values clarification activities and the total process of community problem solving sometime during the school year. The timing of this exposure would depend on the judgement of the class.

If an environmental education program revolved around the community problem solving process and its supporting activities, a twelfth grader might not be exposed to all aspects of the environment, but he should be more sensitive to his environment, better able to recognize problems, more sophisticated in the use of problem solving skills and more inclined to participate in action activities to deal with environmental problems.

Section III

Guidelines for Implementing the Environmental Education Model

SECTION III

INTRODUCTION TO GUIDELINES FOR IMPLEMENTING THE ENVIRONMENTAL EDUCATION MODEL

Environmental Education is often concerned with many issues and situations which can be difficult for teachers and students unless careful thought and preparation is put into how such issues and situations should be handled.

Guidelines should be established before teachers and students become involved in Environmental Education processes, such as community problem solving.

The following four sets of guidelines should prove to be helpful in your implementation of Environmental Education.

Guidelines are included for:

1. Selecting a community issue
2. Handling controversial issues
3. Handling values
4. Students entering a community to contribute to the solution of local Environmental problems.

The following are guidelines to be considered by the teacher in assisting students to handle the environmental education model effectively.

-25-/26

Guidelines for Implementing the
Environmental Education Model

Guidelines for the teacher

Part 1: Selecting a Community Issue

The following are guidelines to be considered by the teacher is assisting students in the selection of a community issue to be studied:

a. An issue should be selected as a result of a student-teacher interaction--a cooperative venture.

b. An issue should be current and important to the class.

c. A suitable issue should consider students' background, ability, and maturity.

d. An issue should not be too complex for the class to comprehend.

e. An issue in which there is resource material appropriate to the abilities of the class and covering the various issue perspectives.

f. An issue for which there is adequate time to study and to work toward the solution.

g. An issue that the teacher is prepared to handle.

h. An issue that the school principal, local P.T.O., and central administration would support as being appropriate for class study and action (an environmental education program should establish effective communication lines between the environmental education staff and school administrators, teachers, parents, and the community at large.

1. The issue should be selected only after considering items such as student interest in the project, student and community priorities, available resources, funding, risks involved (personal, class, school, etc.), school board policies, and the social implications of the work you are planning in that community.

Part 2: Handling Controversial Issues

The following are guidelines to be considered by the teacher in handling controversial issues in the classroom:

a. The classroom teacher must be aware of and take into account the policies of the local Board of Education regarding the handling of controversial issues.

b. The teacher should know the "times", the student body, and its cultural or sub-cultural make-up as they pertain to the issue at hand.

c. The teacher should assist pupils in identifying problems, collecting information, identifying alternative solutions, evaluating solutions, developing a plan of action, and working toward a selected solution or solutions.

d. Emphasis should be placed on considering the issue from an ecological, economic, political, social, and technological point of view.

e. The teacher should strive to bring in divergent views, references, and resource persons.

f. Emphasis should be placed on considering all aspects of a problem before making decisions.

g. Emphasis should be placed upon the fact that a student may or may not agree with another's point of view but should respect that person's right to it.

h. Before progressing into the action phase, the class should consider the social implications of any action.

Part 3: Handling Values

The following are guidelines to be considered the the teacher in handling values in the classroom.

a. When using activities and strategies for values clarification, encourage a classroom atmosphere of openness and honesty where diversity of opinion is encouraged and the opinions of others are respected.

b. The teacher should strive to help the class learn to listen to one another. One of the best ways to do this is for the teacher to be a model of a good listener.

c. When dealing with values the focus should be on the "process of valuing", not on the transmission of the "right set of values".

d. Valuing approaches should be used which will help students become aware of values they hold and prize.

e. Assist each student to build his own set of values.

f. Assist each student in considering alternatives, the consequences of each alternative, and his personal feelings toward each alternative before he acts.

g. Assist each student in considering whether his actions match his stated beliefs, attitudes and values and if not, how to bring the two into closer harmony.

h. Whenever a student does not want to respond to a valuing activity, he should be given the right to pass.

i. The teacher should participate in the valuing exercises and discussions whenever possible. The best time for the teacher to give his view is usually toward the end, after the students have had a chance to think things through for themselves and to express their own point of view. The teacher should express himself as a person with values of his own. Thus the teacher shares his or her values, but does not impose them.

Part 4: Sensitivity Guidelines for Students Entering a Community to Contribute to the Solution of Local Environmental Problems.

The following are guidelines to be considered by the teacher in helping to prepare students for entering a community for the purpose of working toward the solution of local environmental problems:

a. Students involved in community action projects:

1. Students should be aware of their personal values (e.g., elitism, classism, racism, sexism, ageism, etc.) and values of the community with which they will be working. Training sessions to help students to identify their values and to work on value conflicts should be provided.

2. Students should be aware of personal values they hold that might be different from the values of the community sector with which they will be working. In the event that value conflicts exist, training sessions should be provided to foster values sensitivity and to work on value conflicts.

3. Students should be aware of personal relationships with other people and if conflicts exist, training sessions to work on problem areas (personality barriers, working relationships, etc.) should be provided.

4. Students should be aware of resources (i.e., knowledge, skills, materials, equipment, etc.) that they personally have or have access to, and resources that other members of their class bring to the group.

b. Student sensitivity toward the community:

1. Students should not enter the community like gangbusters.

2. Students should be good community listeners.

3. Students should interact with existing community leadership.

4. Students should be informed about the community (i.e., people, the government, politics, functioning of community, living conditions, environmental status, concerns of the residents, etc.).

5. Students should be aware of and work with community people and organizations that have the resources and past experience to be of assistance in working on the community problem solving project.

6. Students should be aware of the social implications of their actions.

7. Students should develop strong ties with community individuals and organizations in order to build a community base and to provide on-going support for the project.

c. Ways to identify community projects:

1. Obtaining ideas from students, faculty, school administration, citizens, government officials, etc.

2. Attending public hearings and meetings.

3. Reading community newspapers and newsletters.

4. Listening to local radio and T.V. public-affairs programs.

d. Implementing community action projects:

1. Students should be deeply involved in the learning process. The process should not be leader centered.

2. Credit should always be given where credit is due.

Section IV

Environmental Education Resource Materials

Section IV

Environmental Education Resource Materials

Following are lists of Environmental Education Resource Materials that may be helpful to teachers in integrating Environmental Education activities into the total curriculum.

The material that follows is not meant to be exhaustive, but rather some of the better material related to environmental education.

Some of the major categories that follow are:

A. Sources of prepared environmental education curriculum materials for teachers.

B. Information agencies and organizations.

C. Sources of environmental, natural history and ecological films.

D. Periodicals

E. Publishing companies.

F. Bibliography of environmental and instructional materials.

G. Environmental monitoring kits.

H. Environmental games and simulations.

I. Series of prepared catalogues and bibliographies.

J. Sources of A.V. Materials - overlays, transparencies, posters, charts, diagrams & maps.

A. SOURCES OF PREPARED ENVIRONMENTAL EDUCATION CURRICULUM MATERIALS FOR TEACHERS

AIR POLLUTION CONTROL ASSOCIATION - 4400 Fifth Ave., Pittsburgh, Pa., 15213: "Air Pollution Experiments for Junior and Senior High School Science Classes." (1969) $1.00/copy.

AMERICAN EDUCATION PUBLICATIONS - Education Center, Columbus, Ohio 43216: "Focus on Pollution" ecology series with teacher guidelines. Designed for upper elementary-junior high. Includes experiments.

AMERICAN FOREST INSTITUTE - 1619 Massachusetts Ave., N.W., Washington, D.C. 20036: "Learn to Love Trees", a sample of teaching units prepared by the Institute for Elementary Teachers. Single copies free. Quantity copies .05 each.

AMERICAN LUNG ASSOCIATION - Contact your local branch as listed in your telephone directory for information and curriculum suggestions on air pollution and health. Guide available free of charge. K-12.

THE CENTER FOR CURRICULUM DESIGN - P.O. Box 350, Evanston, Ill., 60204: "You are an Environment" teaching-learning activities designed to develop environmental attitudes. Send for catalog which includes price information for curriculum, films and books.

CONCERN, INC. - 2100 M. St., N.W., Washington, D.C. 20037: Copies of "Eco-Tips" available on a number of environmental/ecological topics. Examples include "Solid Waste," "Over-Packaging," "Automobile Pollution" and "Consumer Guidelines." Published in pamphlet form $5.00/100.

CONSERVATION AND ENVIRONMENTAL STUDIES CENTER - Box 2230 R.D. 2, Brown Mills, New Jersey, 08015: A multidisciplinary approach in curriculum design. Includes background information, activities and resources. Sample units include: "Land Use", "Water, the Waste of Plenty," "Angling for an Unknown Direction." Good for use in mathematics classes, Junior High and up. $1.50 each.

EAST SYRACUSE - MINOA - Environmental Education Project Coordinator, Administration Building, 407 Fremont Rd., East Syracuse, N.Y., 13057: Science and Social Studies curriculum guide, K-12. Divided into elementary, Middle School and High School. Complete listings of concepts, corresponding activities and resources. Individual grades .50-1.00. Total curriculum package: $8.00.

ECOLOGY CENTER OF ANN ARBOR - Environmental Education Coordinator, 417 Detroit St., Ann Arbor, Michigan 48104: Designed curriculum available on Organic Gardening, Energy, Transportation, Solid Waste and Basic Ecological Concepts. Resource materials available for free-loan. .10/unit.

ENVIRONMENTAL ACTION COALITION - ECO-NEWS - 325 E. 49th St., N.Y. N.Y., 10017: Children's newsletter accompanied by corresponding teacher's guide. Individual issues devoted to single topic areas such as: recycling, trees, population and solid waste. Very reasonably priced.

ENVIRONMENTAL SCIENCE CENTER - 5400 Glenwood Ave., Golden Valley, Minnesota 55422: Curriculum materials designed for middle school-adult. Science oriented with experiments. Sample units include: "Transect Studies," "Life Forms and Soil," "Soil Testing and Sampling," "Nature Hunt," "Outdoor Activities," "Population," and "Micro-Climates." Prices vary from .50-$1.00/unit.

ERIC - Center for Science, Mathematics and Environmental Education, 1800 Cannon Dr., 400 Lincoln Tower, Ohio State University, Columbus, Ohio 43210: A resource service organized by topic areas and grade levels. Sample environmental education materials include: "A Review of Environmental Education for Teachers of Urban/Disadvantaged" and "100 Activities for Environmental Education." Both $3.50.

THE GARDEN CLUB OF AMERICA - Conservation Committee, 518 Madison Ave., N.Y., N.Y., 10022: Conservation oriented curriculum suggestions and audio-visual aids on Birds, Wildlife and Conservation. K-6 Free.

GIRL SCOUTS - ECO-ACTION PROJECT BOOKS - Girl Scouts of Metropolitan Detroit, 153 E. Elizabeth St., Detroit, Michigan 48002: Especially designed curriculum materials for Girl Scouts but suitable applications for elementary classes. Three successive guidebooks and corresponding Leader's Guides introduce ecology and progress to problem-solving and action projects. Write for price information.

J.G. FERGUSON PUBLISHING CO.,- 6 N. Michigan Ave., Chicago, Ill., 60602: "People and their Environment" conservation education curriculum guides for teachers, grades 1-12. Include sources of materials and bibliography of books and films. Volumes $3.95 each or 3 or more volumes, $3.50 each.

KEEP AMERICA BEAUTIFUL - 99 Park Ave., N.Y., N.Y. 10016: Litter prevention and other pollution control projects for high school students. Sample titles include: "Litter Laws" and "71 Things You Can Do to Stop Pollution." Free.

NATIONAL AUDUBON SOCIETY - 1130 5th Ave., N.Y., N.Y. 10022. Curriculum guidelines related to birds, wildlife and nature study. High quality. Consult local branches for price information or write for catalog of education materials.

NATIONAL EDUCATION ASSOCIATION - Sales Section, 1201 Sixteenth St., N.W., Washington, D.C. 20036: "Man and His Environment - An Introduction to Using Environmental Study Areas." Designed to acquaint teachers with new ideas and practices that focus on an interdisciplinary approach to environmental education. Book and filmstrip combination. $1.75. (Publications catalog available.

NATIONAL WILDLIFE FEDERATION - Educational Services Division, 1412 16th St., N.W., Washington, D.C. 20036: Many educational publications, including written curriculum guidelines and Action Leaflets on endangered species, Wildlife of farm and field, Wildlife of forests and rangelands, Wildlife of lakes marshes and streams. .10/copy. NWF is also the publisher for Minnesota Environmental Science Federation, Inc. - Environmental Discovery Units available on "Plants in the Classroom," "Oaks, Acorns, Climate and Habitat," "Man's Habitat: The City," and "Vacant Lot Studies," as examples. Elementary level. $1.00 - 1.50.

NORTH JERSEY CONSERVATION FOUNDATION - 300 Mendham Rd., Morristown New Jersey 07960: "Education for Survival: Ecology in Science and Social Studies." An interdisciplinary approach designed with concept pages, facts and classroom activities. Also included are charts and diagrams. Teacher's guides accompany the 4 volume set, arranged sequentially grades 1-6. Volumes vary in price from $4.00 - 6.00.

P.A. SCHILLER AND ASSOCIATES - P.O. Box 306, Chicago, Ill., 60690 "Knock the Four Walls Down." Inexpensive teaching units in environmental education. Investigations include "In Search of the Sun and the Water", "Creative Writing," "Food Chains," "Streams - all Water?," and "Touch in the Environment." Elementary and junior high. Vary in price from $.35 - .50.

PENNSYLVANIA DEPARTMENT OF EDUCATION - Science Education Advisor, Bureau of General and Academic Education, Box 911, Harrisburg, Pa., 17126: "Reprints of Environmental Instructional Activities" K-6 and 7-12. Spaceship earth concepts. Also, "Science, Nature and the Survival of Man," a non-science environment course for secondary students. Both include background information, activities, and bibliographical information.

PENNSYLVANIA TUBERCULOSIS AND RESPIRATORY DISEASE ASSOCIATION - 311 S. Juniper St., Philadelphia, Pa., 19107: "Our Polluted Air - A Teacher's Guide for a Mobile Workshop." Six lesson plans, complete with flannel board kit. Designed to help elementary school students comprehend the nature of the air pollution problem and the possibilities for a solution. $45.00 East of the Mississippi; $50.00 West of the Mississippi.

PROJECT SEE - Wyandotte Public Schools, 891 Goddard Rd., Wyandotte, Michigan 48192: GREEPS, on insects, making compost, energy and air pollution. Lower elementary through adult.

RODALE PRESS - Educational Services Division, Emmaus, Pa. 18049: "Environmental Education the Organic Way" a series of activities and educational materials tying environmental education to an organic trend in living. Single units on the following: "Best Ways to Improve Your Soil," "Handbook of Composting," "Teaching Science with Garbage," "The Organic Classroom," "Basic Organic Gardening Course," "Teaching Science with Soil," and the "Organic Living Series." K-9. Single units $1.50.

SCIENCE CURRICULUM IMPROVEMENT STUDY - Published by Rand McNally, 405 Park Ave., N.Y., N.Y. 10022: Teacher guidelines and curriculum activities arranged in a series on the following topics: Populations, Environmental Cycles, Ecosystems, Community and Life cycles, Manalient experiments and classroom activities. $1.39 each.

SOIL CONSERVATION DISTRICT - 6101 Jackson Rd., Ann Arbor, Michigan 48103: Curriculum materials on Food, Land, Water, Soil and Outdoor Classrooms on School Sites. Elementary. Free. (Also information on attracting wildlife.)

U.S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE - Washington, D.C. 20250: Curriculum units on "Forest Succession," "Forest Diseases," and "Forest Products," as examples. Conservation teaching aids mainly designed for elementary. Girl Scouts Manualetter available, with corresponding teacher guides. Free.

SOIL CONSERVATION SOCIETY OF AMERICA - 7515 N.E. Ankeny Rd., Ankeny, Iowa 50021: "Environmental Quality and the Citizen - A Teaching Guide for Adult Education Courses Related to the Environment." Single copies: $2.00, postpaid; 2-10 $1.50 ea., 11-99 $1.25 ea; 100 or more $1.00 ea., pp.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY - most publications available through United States Government Printing Office, Washington, D.C. 20402: "The Processing and Recovery of Jon Thomas Cool Cat" and "There Lived a Wicked Dragon" coloring and activities books for children on Solid Waste. $.55 each. Legislative summaries and pollution control laws also available.

UNITED STATES FOREST SERVICE - R. Region, Milwaukee, Wisconsin, 53203: "Investigating Your Environment Series" A sensitivity awareness and problem-solving approach for upper elementary students through adults. Units on soils, forests, water, wildlife and outdoor activities. Experiments included. Free.

WEBSTER-McGRAW-HILL BOOK COMPANY - Manchester Rd., Manchester, Mo., 63011: "Elementary Science Study." Complementary teacher's guides, problem cards and student kits on these sample topics: "Growing Seeds," "Micro-gardening," "Pond Water," and "Rocks." Available in classroom quantities. Reasonably priced.

ZERO POPULATION GROWTH - Population Reference Bureau, Inc. 1755 Massachusetts Ave., N.W., Washington, D.C. 20036: "The World Population Dilemma," a textbook on population designed for elementary and secondary students. Part of a series entitled "This Crowded World" (grades 4-6) and "People" (grades 7-9). World and U.S. population data in chart form also available. Free.

B. INFORMATION AGENCIES AND ORGANIZATIONS

Listed below are agencies and organizations that are good sources for information. Many of the groups listed below also produce newsletters and provide free or inexpensive materials.

Air Pollution Control Assoc. Publications
4400 Fifth Avenue
Pittsburg, PA 15213

American Assoc. of University Women
2401 Virginia Ave., N.W.
Washington, D.C. 20007

American Assoc. for Conservation Information
1416 Ninth Street
Sacramento, CA 95814

American Cancer Society
219 East 42nd St.
New York, N.Y.

American Conservation Association
30 Rockefeller Plaza
New York, N.Y. 10020

American Forestry Assoc.
919 17th St., N.W.
Washington, D.C. 20006

American Forest Institute, Ed. Div.
1835 K St., N.W.
Washington, D.C. 20006

American Petroleum Institute School Program
1271 Avenue of the Americas
New York, N.Y. 10020

Association of Interpretive Naturalists
1251 East Broad St.
Columbus, Ohio 43205

Boy Scouts of America
National Council
New Brunswick, New Jersey 08903

Bureau of Outdoor Recreation
U.S. Dept. of the Interior,
Division of Information
19th and C Sts. N.W.
Washington, D.C. 20240

Bureau of Solid Waste Management
Environmental Control Admin.
Consumer Protection and Environmental Health Services
Arlington, Virginia 22203

Bureau of Sport Fisheries and Wildlife
Fish and Wildlife Services
Washington, D.C. 20240

Citizens for Clean Air
40 W. 57th St.
New York, N.Y. 10019

Citizens League Against the Sonic Boom
19 Appleton Street
Cambridge, Massachusetts 02138

Committee for Environmental Information
435 N. Skinker Blvd.
St. Louis, MO 63130

Conservation and Environmental Science Center
Box 2230, R.D. #2
Browns Mills, New Jersey 08025

Conservation Education Association
Wilson F. Clark, President
Eastern Montana College
Billings, Montana 59101

The Conservation Foundation
1250 Connecticut Ave., N.W.
Washington, D.C. 20036

Ecological Society of America
Radiation Ecology Section
Oak Ridge National Laboratory
Oak Ridge, Tennessee 37831

Environmental Action Coalition, Educational Services
235 E. 49th Street
New York, N. Y. 10017

Environmental Science Services Admin.
U.S. Department of Commerce
Rockville, Maryland 20852

Federal Water Pollution Control
Administration
Crystal Mall., Bldg. 2
1921 Jefferson Davis Hwy.
Arlington, Virginia 22203

Forest Service, U.S. Dept. of Agri.
Information and Education
Room 3223 S. Agriculture Bldg.
Washington, D.C. 20250

Friends of the Earth
30 E. 42nd Street
New York, N.Y. 10017

The Garden Club of America
598 Madison Avenue
New York, N.Y. 10022

International Union for Conservation
of Nature and Natural Resources
2000 P St., N.W.
Washington, D.C. 20006

The Izaak Walton League of America
1326 Waukegan Road
Glenview, Ill. 60025

John Muir Inst. for Env. Studies
451 Pacific Ave.
San Francisco, CA 94133

Keep America Beautiful, Inc.
99 Park Avenue
New York, N.Y. 10016

League of Woman Voters of the U.S.
1200 17th St., N.W.
Washington, D.C. 20036

National Air Pollution Control Admin.
Consumer Protection & Env. Health Ad.
Arlington, Virginia 22203

National Audubon Society
1130 Fifth Avenue
New York, N.Y. 10028

National Conference on State Parks
1700 Pennsylvania Ave., N.W.
Washington, D.C. 20006

National Council of State Garden Clubs
4401 Magnolia Street
St. Louis, MO 63110

National Parks Association
1701 18th St., N.W.
Washington, D.C. 20009

National Science Teachers Assoc.
1201 16th St., N.W.
Washington, D.C. 20036

National Tuberculosis & Respiratory
Disease Assoc., Materials Devel.
1740 Broadway
New York, N.Y. 10019

National Wildlife Federation
1412 16th St., N.W.
Washington, D.C. 20036

National Youth Conference on Natural
Beauty and Conservation
c/o Girl Scouts of the U.S.A.
830 Third Avenue
New York, N.Y. 10022

The Nature Conservancy
1522 K St., N.W.
Washington, D.C. 20006

Oceanographic Education Center
Box 585
Falmouth, MA 02541

Planned Parenthood World Population
515 Madison Avenue
New York, N.Y. 10022

Population Council, Inc.
230 Park Avenue
New York, N.Y. 10017

Resources for the Future
1755 Mass. Ave., N.W.
Washington, D.C. 20036

Scientists' Institute for Public
Information
30 E. 68th Street
New York, N.Y. 10021

Sierra Club
1050 Mills Tower
San Francisco, CA 94104

Soil Conservation Service
Washington, D.C. 20250

Sport Fishing Institute
Suite 503
719 13th St., N.W.
Washington, D.C. 20006

Student Conservation Assoc.
Sagamore Hill Nat. Historical Site
Mld. Rt. Box 304
Oyster Bay, N.Y. 11771

United States Forest Service
Washington, D.C. 20250

Urban American
1717 Massachusetts Ave., N.W.
Washington, D.C. 20036

The Wilderness Society
729 13th St., N.W.
Washington, D.C. 20005

Zero Population Growth
367 State Street
Los Altos, CA

Box 259 Village Station
New York, N.Y. 10014

C. SOURCES OF ENVIRONMENTAL, NATURAL SCIENCE AND ECOLOGICAL FILMS

ABC MEDIA CONCEPTS - 1330 Avenue of the Americas, New York, N.Y. 10019

AIMS INSTRUCTIONAL MEDIA SERVICES, INC. - P.O. Box 1010, Hollywood, California 90028

AMERICAN DOCUMENTARY FILMS - 379 Bay St., San Francisco, CA 94133

AMERICAN EDUCATIONAL FILMS - 331 N. Maple Dr., Beverly Hills, CA 90210

CHURCHILL FILMS - 662 N. Robertson Blvd., Los Angeles, CA 90069

CINEMA ASSOCIATE PRODUCTIONS, INC. - Box 621, E. Lansing, MI 48823

THE CONSERVATION FOUNDATION - 1717 Massachusetts Ave., N.W., Washington, D.C. 20036

CONTEMPORARY McGRAW-HILL FILMS - 828 Custer Ave., Evanston, Ill. 60202

CREATIVE FILM SOCIETY - 7237 Canby Avenue, Reseda, CA 90069

ENCYCLOPEDIA BRITANNICA EDUCATIONAL CORPORATION - 425 N. Michigan Ave., Chicago, Illinois 60611

ENVIRONMENTAL EDUCATORS INC. - 732 7th St., N.W., Washington, D.C. 20006

ENVIRONMENTAL INFORMATION CENTER - 124 39th St., N.Y., N.Y. 10016

FILMS FOR SOCIAL CHANGE - 6244 Delmar Blvd., St. Louis, MO 63130

FILMS INCORPORATED - 1144 Wilmette Ave., Wilmette, Ill. 60091

STUART FINLEY, INC. - 3420 Mansfield Rd., Falls Church, VA 22041

HOLT, RINEHART AND WINSTON, INC. - Media Department, 383 Madison Ave., New York, New York 10017

LEARNING CORPORATION OF AMERICA - 711 Fifth Ave., N.Y., N.Y. 10022

MASS MEDIA ASSOCIATES - 2116 N. Charles St., Baltimore, Md. 21218

MEDIA FOR THE URBAN ENVIRONMENT - 75 Frost St., Brooklyn, N.Y. 11211

MICHIGAN DEPARTMENT OF EDUCATION - 735 E. Michigan Avenue., Lansing, Michigan 48913

MICHIGAN DEPARTMENT OF NATURAL RESOURCES - Film Service, Lansing, Michigan 48926

NBC EDUCATIONAL ENTERPRISES - 30 Rockefeller Plaza, N.Y., N.Y. 10020

NATIONAL ASSOCIATION OF CONSERVATION DISTRICTS - Environmental Film Service, P.O. Box 355, League City, Texas 77573

NATIONAL AUDUBON SOCIETY - Photo and Film Department, 930 Third Ave., New York, New York 10022

NATIONAL BANK OF DETROIT - Public Relations Department, 611 Woodward Avenue, Detroit, Michigan 48232

NATIONAL FILM BOARD OF CANADA - 680 5th Avenue, N.Y., N.Y. 10019

NATIONAL TUBERCULOSIS AND RESPIRATORY DISEASE ASSOCIATION - 1740 Broadway, New York, New York 10019

PLANNED PARENTHOOD - WORLD POPULATION - Film Library, 247 W. 25th St., New York, New York 10001

PYRAMID FILMS - Box 1048, Santa Monica, California 90406

RODALE PRESS FILMS - c/o Bullfrog Films, Box 114, Milford Square, PA 18935

SIERRA CLUB FILM LIBRARY - c/o Association-Sterling Films, La Grange, Illinois 60525

TIME - LIFE FILMS - 43 W. 16th Street, N.Y., N.Y. 10010

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY - Region V, One North Wacker Drive, Chicago, Illinois 60606

UNIVERSITY OF CALIFORNIA, EXTENSION MEDIA CENTER - Berkeley, CA 94720

THE UNIVERSITY OF MICHIGAN, AUDIO-VISUAL CENTER - 416 Fourth St., Ann Arbor, Michigan 48103

WASHTENAW COUNTY LIBRARY - 4133 Washtenaw Ave., Ann Arbor, MI 48104

JOHN WILEY AND SONS, INC. - 605 3rd Avenue, N.Y., N.Y. 10016

XEROX FILMS - Stamford, Connecticut 06904

(Total number of distributors listed: 37)

D. PERIODICALS

The following periodicals are highly relevant to environmental education. Some of these should be in your school library. Others you may want to subscribe to personally.

American Forests Magazine
American Forestry Association
919 17th Street, N.W.
Washington, D.C. 20006

Audubon
National Audubon Society
1130 Fifth Avenue
New York, New York 10023

Childhood Education
Association for Childhood Education International
3615 Wisconsin Avenue, N.W.
Washington, D.C. 20016
Issue of October, 1970

Current History (A World Affairs Monthly)
1822 Ludlow Street
Philadelphia, PA 19103
U.S. Resources: A Tally Sheet/June,'70
America's Polluted Environment/July,'70
Options for a Cleaner America/August,'70

Current Science
American Education Pubs. Science Div.
55 High Street
Middletown, Conn. 06457

Ecology
The Journal of Cultural Transformation
Ecology Action Educational Institute
Box 3025
Modesto, CA 95352

Eco-News
Childrens Environmental Newsletter (monthly, Grades: 2-3)
Environmental Action Coalition
235 East 49th St.
New York, N.Y. 10017

Editorial Research Report on Urban Env.
Editorial Research Reports
1735 K St.
Washington, D.C. 20006

Environment
438 North Skinker Blvd.
St. Louis, Missouri 63130

Environmental Education
Dembar Education Research Services, Inc.
Box 1605
Madison, Wisconsin 53701

Environmental Science & Technology
American Chemical Society
1155 16th St., N.W.
Washington, D.C. 20036

Environmental Quality Magazine
Environmental Awareness Assoc., Inc.
6355 Topanga Canyon Blvd.
Woodland Hills, California 91364

Grade Teacher
Mr. Harold Littledale, Editor
22 W. Putnam Avenue
Greenwich, Conn. 06830
Articles of Jan. '68 and '69

Journal of Outdoor Education
Northern Illinois University
DeKalb, Illinois
Box 299, Oregon, Ill. 61061

Land Pollution Reporter
Freed Publishing Co.
P.O. Box 1144
FDR Station
New York, N.Y. 10022

The Living Wilderness Quarterly
The Wilderness Society
729 15th St., N.W.
Washington, D.C. 20005

Man's Control of the Environment
Congressional Quarterly
1735 K Street
Washington, D.C. 20006

National Parks Magazine
National Parks Association
1701 18th St., N.W.
Washington, D.C. 20009

National Wildlife Magazine
National Wildlife Federation
1412 Sixteenth St., N.W.
Washington, D.C. 20036

Naturalist
Natural History Society
Medical Arts Building
Minneapolis, MN 55402

Natural Study Magazine
A Journal for the Advancement of Environmental Education
The American Nature Study Soc.
R.D. #1
Homer, New York 13077

Pacific Search
Journal of Natural Science in the Pacific Northwest
200 Second Avenue, N.
Seattle, Washington 98109

Public Affairs Pamphlet
#403 Air; #421 Environment fit for People; #450 Noise
Public Affairs Committee
381 Park Ave. S.
New York, New York 10016

Scholastic Teacher
Scholastic Magazines, Inc.
50 W. 44 St.
New York, New York 10036

Science
American Association for Advancement of Science
1515 Massachusetts Ave., N.W.
Washington, D.C. 20005

Science Activities Magazine
9150 Central Park Avenue
Skokie, Illinois 60076

Scientific American
415 Madison Avenue
New York, N.Y. 10017

Science and Children
National Science Teachers Assoc.
1201 16th St., N.W.
Washington, D.C. 20036

The Science Teacher
National Science Teachers Assoc.
1201 16th St., N.W.
Washington, D.C. 20036

Sierra Club Bulletin
Sierra Club
1050 Mills Tower
San Francisco, CA 94104

Today's Education
The Journal of the National Education Association
1201 16th., N.W.
Washington, D.C. 20036

E. PUBLISHING COMPANIES

The following publishing houses produce excellent environmental materials. A letter to any of the publishing companies requesting a catalogue should provide information pertaining to the variety of instructional aids produced.

Allyn & Bacon, Inc.
470 Atlantic Avenue
Boston, Massachusetts 02210

Atheneum Publishers
122 E. 42nd Street
New York, N.Y. 10017

T.J. Chandler Publishing Co.
124 Spear Street
San Francisco, CA 94105

Crowell Collier-MacMillan
866 Third Avenue
New York, N.Y. 10022

Crown Publishers, Inc.
419 Park Avenue., S.
New York, N.Y. 10016

Columbia Books, Inc.
917 15th St., N.W.
Washington, D.C. 20005

Coward-McCann, Inc.
200 Madison Avenue
New York, N.Y. 10016

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G. ENVIRONMENTAL MONITORING KITS

1. INSTRUCTOR CURRICULUM MATERIALS - Gimmy and Company, 13131 West McNichols Rd., Detroit Michigan 48235: "Outdoor Activities for Environmental Studies." Detailed instructions for activities and projects that include measuring horizontal and vertical distances, the secchi disk (for water clarity), measuring ground cover, wind speed and direction slope measurement, moving water, soil compaction and absorption rate, and others. Activities incorporate a multidisciplinary approach. 48 pgs. $1.50/book.

2. BAKER SCIENCE PACKETS - 650 Concord Drive, Holland Michigan 49423, "Physical Science Packet." Total of 177 experiments in 11 units, covering teacher demonstrations, student activities and projects. "Nature Study Packets." Total of 166 activities on ecology, conservation, pollution and other environmental problems. Both grades 1-9. Write for price information.

3. J.B. LIPPINCOTT CO. — E. Washington Square, Philidelphia, Pa., 19105, "Life Science: A Search for Understanding" and "Physical Science: A Search for Understanding." A program of human ecology and physical science, respectively. Lab experiments included with each.

4. SELECTIVE EDUCATIONAL EQUIPMENT, INC. - 3 Bridge St., Newton, Mass., 02195, "City Ecology." Involves the student in observing, measuring, predicting, etc., of subject matter; includes student activity cards, rain gauges, soil samples and other materials - Grades 4-8. "Illuminated Student Microscope." Low-cost, unbreakable 120x microscope; may also be used as micro-projector or water-drop microscope. Other microscopes available from 5x to 40x; also magnifying lenses.

5. URBAN SYSTEMS, INC. - 1033 Mass. Ave., Cambridge, Mass. 02138. "Ecology Kits I - VIII ($5 and up); kits to teach basic ecological principles; includes vials, seeds, filter and chromotography paper, shrimp, algae, earth substances, chemical reagents and other equipment." Eco Kits I - VIII (4-up)-similar to above kits.

6. HACH CHEMICAL CO. - Box 907 Ames, Iowa 50010. Soil and water testing kits available for acidity, alkalinity, dissolved oxygen and phosphate, as examples. From the very simple to the more complex. Moderate pricing.

7. LA MOTTE CHEMICAL EDUCATIONAL PRODUCTS DIVISION - Chestertown, Maryland 21620. Sampling and measurement equipment for limnology, oceanography, water pollution and soil science studies. Both inexpensive and more elaborate kits available.

8. WARD'S NATURAL SCIENCE ESTABLISHMENT, INC. - P.O. Box 1712, Rochester, New York 14603. "Water Pollution Learning System," "Heredity and Environment Kit," "pH measurement / Indicator kit," Plankton tow nets and seive sets and soil sampling sets available. Total section of catalog devoted to environmental kits for water, soil, air and weather.

9. OCEANOGRAPHY UNLIMITED, INC. - 91 Delaware Avenue, Patterson, N.J. 07503: Catalog arranged by: 1) Classroom materials including aquaria, live and preserved marine specimens, globes, models, charts, boards, etc., 2) Laboratory materials, including environmental research kits, seismographs, experiments and fish, 3) Field portion includes water analysis kits, oceanographic field kits, seives, nets, dredges, and other equipment for water sampling. Send for the Educational Catalog.

10. TURTOX PRODUCTS - c/o Crowell, Collier and Macmillan, Inc., 9200 S. Wayne Avenue, Chicago, Ill. 60620: Biological and botanical supplies including preserved plant and animal specimens, zoological specimens, fossil and mineral charts and specimens, demonstration apparatus for plant parts, and an exclusive selection of microscope slides. Charts, transparencies and Kodachrome slides also available. A wide selection of collecting equipment, moderately priced, is also included.

11. CAROLINA BIOLOGICAL SUPPLY CO. - Burlington, North Carolina 27215: Ecology Kits designed to construct a well-balanced 1-gallon aquarium and four terraria: bog, carnivorous, woodland and sandhill, $16.00/kit. Live and preserved specimens, chemical sets, dissection mounts, and experimental equipment also available.

12. SCHOOLMASTERS SCIENCE - 745 State Circle, Ann Arbor, Michigan 48104: "Ecology Aids" section includes film and cassette combination with corresponding teacher's manual for air, soil and water pollution. Individual kits: $11.95. Complete set of three kits: $34.95. Biological and chemical water pollution test kits available for $29.95 each. A total of eight water investigations filmstrip/cassette combination and 22 packaged teacher's guide available for $49.95. Air pollution posters available for $2.95/set. Assorted other material pertaining to biological, geological and zoological study also available.

13. MILLIPORE CORP. - Bedford, Massachusetts 01730: "Biological Analysis of Water and Wastewater" catalog. A complete selection of sampling equipment, laboratory preparation and testing apparatus, field testing equipment and analysis kits. Well organized, instructional catalog, complete with glossary - bibliography.

14. EDUQUIP, INC. - The Sippican Corp., 1229 Adams St., Boston, Mass. 02124: Complete line of air, water and soil pollution test kits, elaborate ecological equipment such as an "ecological chamber," useful in studying effects of various pollutants on plant life, animal life and surface materials such as fabric, paint and rubber. Smog sampling kit, carbon monoxide experiment kit, ozone generator and atmospheric particle detector also available. Prices vary from inexpensive lines up to the high quality and expensive testing equipment.

15. SCIENCE - American Association for the Advancement of Science, J.T. Baker Chemical Co., Phillipsburg, N.J. 08865: "Guide to Scientific Instruments." A complete selection of instruments, equipment and manufacturers essential to scientific testing and experimentation. Highly specialized air sampling and analysis equipment, combustion analysis equipment, nuclear instruments, oceanographic equipment, science teaching equipment and water equipment.

16. KASCO-STEINMILLER - Fort Atkinson, Wisconsin 53538: "Biological Science Catalog 118" Live specimens including algae; aquarium and terrarium plants; prepared microscopic slides; museum mounts of plants and insects; botanical (herbarium) sheets; nature study aids and replicas such as "trees of your state;" field guides and lesson booklets; instructional botanical models; laboratory equipment; seed germination kits; environmental/ecological lab-packs for determining radiation effects and nitrogen-fixation relationships to plant growth; and an extensive collection of other laboratory materials.

17. ARTHUR H. THOMAS CO.- Vine Street at Third, P.O. Box 729 Philadelphia, Pa. 19105: "Thomas Scientific Apparatus and Reagents." Extensive collection of laboratory and experimental equipment, organized alphabetically in a catalog. Samplers for air pollution monitoring and water testing included. Sophisticated, high quality equipment.

H. ENVIRONMENTAL GAMES AND SIMULATIONS

BALANCE

Type:	Simulation/Role Play
Age:	Grade five through college
Time:	Three weeks, one hour per day
Cost:	$10.00 per kit
Number of Players:	Applicable for entire class
Developer:	David Yount and Paul Cacock
Source of Purchase:	Interact, Box 262, Lakeside, California 92040

BLIGHT (Urban Ecology)

Type:	Kit/Simulation
Age:	Middle School through adult
Time:	3-8 hrs.
Cost:	$42.50
Number of Players:	20-40
Source of Purchase:	Instructional Simulations, Inc., 2147 University Ave., St. Paul, MN 55114

BUSHMAN EXPLORING AND GATHERING

Type:	Board game
Age:	Fifth Grade
Time:	One hour each for two phases
Cost:	?
Number of Players:	4-8
Developer:	Abt Associates
Source of Purchase:	Educational Development Center, 15 Mifflin Place, Cambridge, Massachusetts 02139

CITIES GAME

Type:	Kit/Simulation
Age:	High School through adult
Time:	1-2 hours
Cost:	Approximately $10.00
Number of Players:	4-15
Source of Purchase:	Psychology Today Games, Del Mar, CA 92014 or in your local bookstore or department store.

CLEAN UP

Type:	Board Game
Age:	4-13
Time:	1 hour
Cost:	$5.00
Number of Players:	2-6
Source of Purchase:	Ideal Educational Division, 80 Wilson Way, Westwood, MA 02090

CLUG - Community Land Use Game

Type:	Simulation
Age:	College through adult
Time:	6 hours, minimum
Cost:	$75.00 for complete kit
Number of players:	About 15
Developer:	Allan G. Feldt
Source of Purchase:	Urban Affiliates, Inc., 474 Thurston Road, Rochester, New York 14619

COMPACTS - Community Planning and Action Simulation

Type:	Simulation
Age:	College through adult
Time:	3 hrs. for 3 days
Cost:	$75.00 for complete kit
Number of Players:	20-60
Developer:	Armand Lauffer
Source of Purchase:	Gamed Simulations, Inc., FDR Station, Box 1747, New York, New York 10022

DIRTY WATER

Type:	Board game
Age:	Junior high through senior high
Time:	1-2 hours
Cost:	$10.00
Number of Players:	2-4, or teams
Developers	Urban Systems, Inc.
Source of Purchase:	Urban Systems, Inc., 1033 Massachusetts Ave., Cambridge, Massachusetts 02138 (or any toy or department store.)

ECOLOGY

Type:	Board game
Age:	Junior high through senior high
Time:	One to two hours
Cost:	$10.00
Number of Players:	2-4, or teams
Developer:	Urban Systems, Inc.
Source of Purchase:	Urban Systems, Inc., 1033 Massachusetts Ave., Cambridge, Massachusetts 02138 (or any toy or department store.)

ENERGY/ENVIRONMENT GAME

Type:	Role Play/Simulation
Age:	Middle school through adult
Time:	Minimum of 6 hours
Cost:	?
Number of Players:	35-50
Developer:	Creative Studies, Inc., Boston, Mass.
Source of Purchase:	Michigan State University, Science and Mathematics, McDonel Hall, E. Lansing, MI 48823

THE ENVIRONMENT GAME

Type:	Simulation/Role Play
Age:	Grade 5 through adult
Time:	3-4 hours
Cost:	$22.50
Number of Players:	Minimum 4: applicable for entire class.
Developer:	Paul Tveiter
Source of Purchase:	Teaching Research, Oregon State System of Higher Education, Monmouth, Oregon 97361

EXTINCTION

Type:	Board game
Age:	Junior high through senior high
Time:	3 hours minimum
Cost:	$11.00
Number of Players:	2-4
Developer:	Stephen P. Hubbell (Zoology Dept., Univ. of Michigan, Ann Arbor, Michigan 48104
Source of Purchase:	Sinauer Associates, Inc., 20 Second St., Stamford, Connecticut 06905

INDIAN VALLEY

Type:	Role Play/Simulation
Age:	Grades 7-12
Time:	2-4
Cost:	Single copy free; quantity copies $.20 each.
Number of Players:	Suitable for average size class
Developer:	American Forest Institute
Source of Purchase:	American Forest Institute, 1619 Massachusetts Ave., N.W., Washington, D.C. 20036

LAND USE GAME

Type:	Role Play/Simulation
Age:	Grades 5-8
Time:	Minimum of 2 hours
Cost:	?
Number of Players:	Applicable for average size class
Developer:	Education Ventures, Inc.
Source of Purchase:	Education Ventures, Inc., 209 Court St., Middletown, Conn. 06457

LITTERBUG

Type:	Board Game
Age:	Grades 1-6
Time:	Approximately 30-45 minutes
Cost:	?
Number of Players:	Class size or smaller
Developer:	Urban Systems, Inc.
Source of Purchase:	Urban Systems, Inc., 1033 Massachusetts Ave., Cambridge, Massachusetts 02138

LOBBYING GAME

Type:	Role Play/Simulation
Age:	High School through adult
Time:	2-1/2 - 3 hours
Cost:	$50.00 for complete kit
Number of Players:	20-40
Developer:	David Williams, Stanley Aloatain
Source of Purchase:	Games Group II, P.O. Box 2063, Brandeis University, Waltham, MA 02154 or from: Gamsi Simulations, Inc., FDR Station Box 1747, New York, New York 10022

MAN AND HIS ENVIRONMENT

Type:	Simulation/Role Play
Age:	Grade 4 and up
Time:	Adjustable from 20 minutes to several days
Cost:	Free, to educators
Number of Players:	Especially suited for average class size of 30.
Developer:	Dr. Frank S. Golly, Director of Institute of Ecology, University of Georgia
Source of Information:	Any local Coca-Cola Bottling Company

NEW TOWN

Type:	Role Play/Simulation
Age:	College through adult
Time:	1-1/2 hours or more, depending on version played.
Cost:	?
Number of Players:	3-20
Developer:	Barry Ross Lawson
Source of Purchase:	Harwell Associates, Inc., P.O. Box 34, Berkeley Heights, New Jersey 07922

POLICY MAKING SIMULATIONS

Type:	Role Play/Simulation
Age:	College through adult
Time:	Priming Game - 2-3 hrs. Re-design Game - 1-many hrs, Re-play Game - 2-3 hrs.
Cost:	$75.00 for complete kit
Number of Players:	Minimum of 6; 20-35 optimum
Developer:	Frederick L. Goodman
Sources of Purchase:	Urbex Affiliates, Inc., 474 Thurston Road, Rochester, New York 14619

POLLUTION

Type:	Simulation/Role Play
Age:	Elementary School Level
Time:	5-15 periods of 45 minutes each
Cost:	?
Number of Players:	5-15, divided into 3-5 teams
Developer:	Abt Associates
Source of Purchase:	Wellesley Schools Curriculum Center, Seawood Road, Wellesley, MA 60611

POPULATION

Type:	Board game
Age:	6-12 grade
Time:	1-2 hours
Cost:	$10.00
Number of Players:	2-6
Developer:	Damon/Education Division
Source of Purchase:	Damon/Education Division, 99 Wilson Way, Westwood, Massachusetts 02090

PREDATOR-PREY

Type:	Board game
Age:	3-8 grade
Time:	1-2 hours
Cost:	$6.00
Number of players:	Small groups of teams
Developer:	Bernice Collins and Steve Katona
Source of Purchase:	Damon/Education Division, 80 Wilson Way, Westwood, Massachusetts 02090

SMOG:

Type:	Board game
Age:	Junior High through Senior High
Time:	1-2-1/2 hrs.
Cost:	$10.00
Number of Players:	Minimum, 2-4 or teams
Developer:	Urban Systems, Inc.
Source of Purchase:	Urban Systems, Inc., 1033 Massachusetts Ave. Cambridge, Massachusetts 02138, or any toy or department store.

SQUARE MILE

Type:	Role Play/Simulation
Age:	High School through adult
Time:	1-2 hours over 2-3 days
Cost:	?
Number of Players:	2-4, or teams
Developer:	Milton Bradley Co.
Source of Purchase:	Milton Bradley Co., Springfield, MA

TRACTS (Core city land use)

Type:	Simulation/Role Play
Age:	High School through adult
Time:	3-4 hours
Cost:	$39.30 for complete kit
Number of Players:	20-40
Developer:	Instructional Simulations, Inc.
Source of Purchase:	Instructional Simulations, Inc., 2147 University Ave., St. Paul, MN 55114

TRANSIT (Urban Transportation)

Type:	Simulation/Role Play
Age:	High School through adult
Time:	4-10 hours
Cost:	$42.30 for complete kit
Number of Players:	20-40
Developer:	Instructional Simulations, Inc.
Source of Purchase:	Instructional Simulations, Inc., 2147 University Ave., St. Paul, MN 55114

U-DIG (Urban Development Investment Game)

Type:	Simulation/Role Play
Age:	High School through adult
Time:	3-5 hours
Cost:	?
Number of Players:	4-14 optimum
Developer:	Erwin J. Bell
Source of Purchase:	Erwin J. Bell, Associate Professor of Design, College of Environmental Design, University of Colorado, Boulder, Colorado.

VALUES IN ACTION

Type:	Media kit; deals with values clarification
Age:	4-6 grade
Time:	Nine sessions, minimum of 1 hour each.
Cost:	$99.00
Number of Players:	3-36
Developer:	Fannie and George Shaftel
Source of Purchase:	Winston Press, 25 Groveland Terr., Minn. Minn. 55403

WALRUS (Water and Land Resource Utilization Simulation)

Type:	Simulation/Role Play
Age:	High School through adult
Time:	5 hours
Cost:	$40.00 for complete kit
Number of Players:	15-30 optimum
Developer:	Allan C. Feldt and David Wheeo
Source of Purchase:	Urbex Affiliates, Inc., 474 Thurston Road, Rochester, New York 14619

WILDLIFE

Type:	Simulation/Role Play
Age:	Grade 5 through adult
Time:	3 hours minimum
Cost:	$15.00
Number of Players	2-6
Developer:	Richard Meier
Source of Purchase:	Berkeley Gaming Project, Institute of Urban and Regional Development, 315 Wurster Hall, University of Calif., Berkeley, Berkeley, CA 94720

I. SERIES OF PREPARED CATALOGUES AND BIBLIOGRAPHIES

1. COOPERATIVE EXTENSION SERVICE, MICHIGAN STATE UNIVERSITY - E. Lansing, Michigan 48824. Publications available on insects, nutrition, trees, ecology, parks and recreation, wildlife, agriculture, forestry, soil and weather. Send for free catalog or call local extension service office. Inexpensively priced.

2. EDUCATORS PROGRESS SERVICE, INC. - Randolph, Wisconsin 53956: "Educators Guide to free service materials." 1,738 free items for teachers.

3. ECOSOURCE - Janet Woerner, Freeland Community Schools, Freeland, Michigan 48623. Bibliographies of films, literature pamphlets, books and teaching aids. Often evaluated and arranged by topic area. Free.

4. ENVIRONMENTAL ACTION - 1346 Connecticut Ave., N.W., Rm. 731, Washington, D.C. 20036. Publications available. Fine background information. The Case for a Nuclear Moratorium, 1-9, $1.00 ea.; 10-99, $.65 ea., 100 or more, $.40 ea. Nuclear Information Packet: an overview of nuclear energy controversy in the U.S. Packet contains Case for a Nuclear Moratorium as well as other pamphlets. 1-10, $1.50 ea. packet; 10 or more, $.80 ea. How to Challenge Your Local Utility: an organizing manual for citizens who want to challenge utilities on environmental, consumer and social grounds. 1-9, $1.50 ea.; 10-99, $1.00 ea.; 100 or more, $.75 ea. Do It Yourself Ecology: What the individual can do for ecology in his/her own life. 1-49, $.25 ea.; 50-199, $.20 ea.; 200 or more, $.15 ea. Ecotage! Suggestions as to how corporations can be made to pay for their pollution. $1.25 each.

5. ENVIRONMENTAL AND OUTDOOR EDUCATION MATERIALS, CO. - Dowling, Mich. 49050. Suppliers of books, flash cards, posters, and curriculum guidelines. Send for catalog.

6. ENVIRONMENTAL EDUCATION BOOKS AND MATERIALS - GULL LAKE ENVIRONMENTAL PROJECT - Kellogg Bird Sanctuary, Michigan State University, Augusta, Michigan 49012. Books on birds, environmental education and ecology. Science and Environmental series available. Recommended Ecology and Environmental kits. Also includes overhead transparencies, maps, A.V. kits, charts and flash cards. Inexpensively priced. Send for catalog.

7. ENVIRONMENT INFORMATION CENTER, INC. - 124 E. 39th Street, N.Y., N.Y. 10016. "Buyer's Guide to Environmental Media." Includes books (arranged by subject area), periodicals, directories of resources, films and film distributors. Send for catalog.

8. EPIC REPORT - Educational Products Information Exchange Institute, 386 Park Avenue, S., N.Y., N.Y. 10016. An annotated bibliography of environmental education books, films and resources for teachers. Evaluated by the Epic staff. Revised each year.

9. ERIC/SMEAC - The Center for Science and Mathematics Education, Ohio State University, Columbus, Ohio 43210: abstracts and reports on science, mathematics and environmental education available on microfiche. Includes publication description, subject index and author index. Per title cost, $.40. Send for catalog.

10. FRIENDS COUNCIL ON EDUCATION - 1515 Cherry St., Philadelphia, PA, 19102. Environmental Awareness Bibliography: Divided into three parts 1) "Definition of the Problem" - printed material on environmental problems, 2) "Environmental Education" - annotated bibliography of materials pertinent to outdoor, conservation, nature and environmental education, and 3) "Environmental Recreation" - annotated bibliography of outdoor recreation literature.

11. KENT INTERMEDIATE SCHOOL DISTRICT - 2650 E. Beltline S.E., Grand Rapids, Michigan 49506. Prepared bibliographies on books, pamphlets, periodicals and curriculum materials available. Arranged by topic areas.

12. MICHIGAN DEPARTMENT OF EDUCATION - State Library Services, 735 E. Michigan Avenue, Lansing, Michigan 48913: Regularly reviews and compiles books, state and federal publications, filmstrips and names of organizations. Free.

13. MICHIGAN STATE UNIVERSITY COOPERATIVE EXTENSION SERVICE - E. Lansing, Michigan 48824: Publications catalog listing handouts on these and other topic areas: Insects, nutrition, community planning, ecology, parks and recreation, wildlife, agriculture, soils. Send for catalog.

14. NATIONAL EDUCATION ASSOCIATION - ENVIRONMENTAL EDUCATION PROJECT - The National Park Service, U.S. Dept. of the Interior, Washington, D.C. 20036: A compilation of materials for environmental education. Includes annotated information on books, periodicals, audio-visuals, bibliographies and directories. Free.

15. RESOURCES FOR THE FUTURE, INC. - 1755 Mass. Ave., N.W. Washington, D.C. 20036. Publications on these and other topic areas: Natural Resources and Economic Development, General Environmental Studies, Land, Water and Marine Resources, Energy and Non-fuel Minerals and Urban and Regional Studies. Reprints vary in price from $1.00 - 12.00 approximately. Send for publications catalog.

16. UNITED STATES GOVERNMENT PRINTING OFFICE, PUBLIC DOCUMENTS DEPT. - Washington, D.C. 20402. Selected publications relating to environmental protection and legislation. Organized by topic areas. Occasional teaching aids recommended. Free monthly listings.

17. UNITED STATES OFFICE OF ENVIRONMENTAL EDUCATION - Reporter's Building, 300 7th Street, S.W., Rm. 426, Washington, D.C. 20202. Distributors for many environmental education materials prepared through OEE grants. For example, "Aids for Environmental Education - Pre-school, grade 3; grades 4-6; and grades 7-9" are complete bibliographies of books, curriculum materials, films, filmstrips, graphics, magazines and newsletters and addresses. Fully annotated and produced by the Mass. Audubon Society. Available free.

18. THE UNIVERSITY OF MICHIGAN - LIBRARY EXTENSION SERVICES - 2360 S. Campus Blvd., Ann Arbor, Michigan 48105: Bibliographical information listing free and inexpensive teaching materials on a number of subjects: Animals, Health, Industry and Natural Resources, as examples. Free.

J. SOURCES OF A.V. MATERIALS -

(Overlays, transparencies, posters, charts, diagrams and maps)

1. AMERICAN FOREST INSTITUTE - 1619 Mass. Ave., N.W., Washington, D.C. 20036: "Forests and Trees of the United States": Map and teaching guide. All grade levels. Single copy free. Quantity copies $.20 each. "Growth of a Tree." Chart and teaching guide. All grade levels. Single copies free. Quantity copies $.20 each.

2. AMERICAN MAP CO., INC. - 1926 Broadway, N.Y., N.Y. 10023: "Catalog of Cleartype and Colorprint Maps." Maps of the U.S., highlighting principal cities, railroads and highways; useful for urban and transportation studies. Average size: 64" x 44". Average price: $5.95.

3. DENNISON TEACHERS' AIDS - Dennison Manufacturing Co., Framingham, Mass. 01701: Colorful educational pictures and captions. Sets of 9 full-color sturdy panels, 15" wide and 20" high. For example, series on a sea life depicts food chains, man using the sea, lots of water, man abuses the sea, plants, shellfish, shells, fish that we eat and fish that eat us. $5.00/set.

4. ENVIRONMENTAL EDUCATION BOOKS AND MATERIALS - GULL LAKE ENVIRONMENTAL EDUCATION PROJECT - Kellogg Bird Sanctuary, Michigan State University, Augusta, Mich. 49012: Overhead Transparencies on bird groups, soil and water, water fowl, mammals, plant life and ecology. $1.50 each. Full color pictures of birds and animals for use as visual aids. 10-12 in a package. $1.75/pkg. Maps and charts of birds and animals from $.50 - 3.50. Flash cards of "Animals around us," ($1.50) "Pond Life" ($3.00) and "Leaves and Trees" ($2.50).

5. GAMCO INDUSTRIES, INC.- P.O. Box 1911, Big Springs, Texas 79720. "Matter-Atomic" Introduction to the atom, characteristics of matter, energy, radiation, etc. 53 overhead transparencies. Grades 4-8. "Ecology" set of 22 overhead transparencies showing harmony and balance in nature. Grades 4-8.

6. GLOVER AND COMPANY - Office Supplies and Equipment, School and Teachers' Supplies, 13131 W. McNichols Rd., Detroit, Michigan. 48235: Flannel board kits, posters, overlays and transparencies, crafting and building materials for elementary schools. Subject areas include seasons, weather, animals and introductory science. Reasonably priced. Send for catalog.

7. INSTRUCTOR AIDS TO EDUCATION - Available through Glover and Co., 13131 W. McNichols, Detroit, Mich. 48235: Bulletin boards, flannel board kits, pictures, models and maps related to science activities available. Moderately priced. Send for catalog.

8. INSTRUCTO PUBLICATIONS, INC. - P.O. Box 6108, Duluth, Minn. 55806: "Instructor Curriculum Materials" catalog. Includes resource handbooks, teacher materials, duplicating masters and a Science and Ecology section. Set of 12 large and colorful ecology posters of basic ecological concepts and processes. $3.75/set. 12 Eco-problems posters including solid waste, oil and noise pollution, with resource guide material; $3.75/set. A 10-set series of display charts of different science experiments and concepts accompanied by teacher's manual. Topic areas include "electricity and magnetism," "plants"; "matter and energy"; and "earth." Each set; $3.75.

9. MILLIKEN PUBLISHING CO. - Materials available through Gimey and Co., 13131 W. McNichols Rd., Detroit, Michigan 48235. Large distributors for transparency-duplicating books on general, biological and earth science. 20 full-color transparencies and 20 duplicating masters for $6.95. Eight full-color diagrammatic science study prints plus 4 duplicating masters and a teacher's guide available on animals, earth science, electricity and plants. $8.95/set.

10. MILTON-BRADLEY CO. - Springfield, Mass. 01101 "Flannel Science Aids," Flannel cutouts concerning weather, earth-in-space plant growth and seasons. Grades 1-3.

11. NATIONAL AUDUBON SOCIETY - Educational Services, 950 Third Ave., N.Y., N.Y. 10022: "Audubon Aids in Natural Science." Catalog. Includes Audubon study programs, nature bulletins and charts, Audubon slides, flash cards and other assorted aids. Inexpensively priced. Send for catalog.

12. NATIONAL EDUCATION ASSOCIATION CATALOG - Publications and Audio-visual materials, 1201 Sixteenth St., N.W., Wash., D.C. 20036. Includes title, subject and audio-visual indexes. Collaboration of materials distributed by many educational organizations.

13. PORTAL PUBLICATIONS - 777 Broadway, P.O. Box 816 Sausalito, Ca. 94965. Endangered species posters.

14. RODALE PRESS - Educational Services Division, Emmaus, Pa. 18049: "Making Compost in 14 Days." Workbook and poster on composting. Guide for teachers and poster for children. Grades 5-9. $1.75. "Color Me Healthy." Coloring book teaching basic nutritional concepts. Informative text. Grades K-2. $.35/copy.

15. UNITED TRANSPARENCIES, INC. P.O. Box 688, Binghamton, N.Y. 13902. "Environment and Pollution Education." Series of 93 transparencies dealing with ecology, pollution, overpopulation, etc.

16. AMERICAN FOREST INSTITUTE - 1619 Mass. Ave., N.W., Wash. D.C. 20036: "This Unique Bit of Life - How Trees Affect Environment." Filmstrips depicting the many ways trees interact with the natural and man-made environment. 10 minutes, color, with record. Senior High School students. $17.95. "Trees for 2001: Today's Foresters in Action." Filmstrip depicting people who work in the woods, describing their jobs. 17 minutes, color, with record. High School students. $20.00

17. EDUCATIONAL IMAGES - P.O. Box 367, Lyon Falls, N.Y. 13368: "Color Slides Sets for Creative Teaching"; Catalog of slide sets containing 20, 35mm. color slides in a plastic protective page, accompanied by text. Available on ecology, zoology, botany and geology. Sample titles include "Ecology of the Northeastern Forest"; "Rare and Endangered Animals"; and "Erosion." Price/set $15/50.

18. ENCYCLOPEDIA BRITANNICA EDUCATIONAL CORPORATION - 425 N. Michigan Ave., Chicago, Ill. 60611: Filmstrip and film loop catalog organized by grade levels; Primary K-3; intermediate 4-6; and Junior and Senior High 7-12. Arranged by topic areas including environmental, earth and physical science. High quality. Average cost per filmstrip $6.00.

19. NATIONAL EDUCATION ASSOCIATION - 1201 Sixteenth St., N.W., Wash., D.C. 20036: "Environment" series. A collection of action-oriented filmstrips, books and leaflets. "Man and His Environment" filmstrip. Designed to orient teachers to innovative approach to environmental education for all school levels and subjects. Printed guide and script and recorded narration. 14 minutes; 91 frames; $17.00 "Environmental Crisis Filmstrip"; what the individual can do. Designed to inspire public action. Outlines specific changes that can be made in personal lives and in local communities. Middle through high school. Includes printed guide and script and recorded narration. 17 minutes; 117 frames; $15.00.

20. RODALE PRESS - Educational Services Division, Emmaus, Pa., 18049. "Insects Here to Help You and the Environment." Filmstrip on biological control of insect pests. Grades 7-12. $13.95.